

Claims

1. A bus station having a primary function such as a sensor function and that may be coupled to a bus system, comprising:
 - at least one bus interface for communication of said bus station with said bus system, and
 - a bus monitor means integrated with said bus station and coupled to said bus interface, said bus monitor means giving said bus station a secondary function, wherein said bus monitor means is adapted for at least one of the following activities: monitoring of the communication of said bus station with said bus system via said bus interface, and monitoring of the internal communication within said bus station.
2. The bus station according to claim 1,
wherein the bus monitor means makes monitor data available to said bus system and/or receives monitor data from said bus system.
3. The bus station according to claim 1,
wherein the bus monitor means accesses data telegrams of said bus system and detects them in the form of monitor data in order then to make them then available to said bus system, which results in said bus station having the function of a bus monitor.
4. The bus station according to claim 1,
wherein said bus monitor means accesses data of said bus station and detects them in the form of monitor data in order then to make them available to said bus system, which results in said bus station having the function of a bus monitor.
5. The bus station according to claim 1,

wherein said bus monitor means comprises a program unit for accessing data telegrams of said bus system and data of said bus station itself and processes them further.

6. The bus station according to claim 1,
wherein said bus monitor means comprises at least one filter for evaluating the detected monitor data according to certain filtering criteria.
7. The bus station according to claim 6,
wherein said filter is a command filter.
8. The bus station according to claim 6,
wherein said filter is an address filter.
9. The bus station according to claim 6,
wherein said filter is a combined command-address filter.
10. The bus station according to claim 1,
wherein said bus monitor means comprises a telegram memory for storing the detected monitor data.
11. The bus station according to claim 1,
wherein the monitor data detected by said bus monitor means are made available to said bus system via said bus interface for further processing.
12. The bus station according to claim 1,
wherein said bus station comprises a further interface for reading out the monitor data detected by the bus monitor means for further processing by an external evaluating system.

13. The bus station according to claim 1,
wherein said bus monitor unit comprises a screen or display for visualizing monitor data.
14. The bus station according to claim 10,
wherein said monitor data may be evaluated on-line.
15. The bus station according to claim 10,
wherein said monitor data may be evaluated off-line.
16. The bus station according to claim 1 or claim 11,
wherein said bus monitor means automatically communicates the obtained monitor data to other bus stations or to an evaluating system.
17. The bus station according to claim 1,
wherein said bus station is a sensor or an actuator.
18. The bus station according to claim 17,
wherein said sensor is a filling level measurement device.
19. The bus station according to claim 1,
wherein said bus station is a control unit for reading-in the process data of the sensorics and for outputting process data to the actorics.
20. The bus station according to claim 15,
wherein said control unit is a memory programmable controller.
21. The bus station according to claim 1,

wherein said bus station is a gateway linking two different bus systems with each other.

22. The bus station according to claim 1,
wherein said bus station is a bridge linking two like bus systems with each other.
23. A network having at least one bus system and at least one bus station having a primary function, such as a sensor function, and which may be coupled to a bus system,
 - wherein said bus station comprises at least one bus interface for communication of said bus station with said bus system, and a bus monitor means; wherein said bus monitor means is integrated with said bus station and coupled to said bus interface, and giving said bus station a secondary function, wherein said bus monitor means is adapted for monitoring of the communication of said bus station with said bus system via said bus interface,
 - wherein said network is monitored by means of said bus monitor means integrated with said bus station.
24. A method for carrying out monitoring processes of a bus system, comprising:
 - coupling a bus station to said bus system, wherein said bus station has a primary function such as a sensor function, and comprising at least one bus interface for communication of said bus station with said bus system, and a bus monitor means; wherein said bus monitor means is integrated with said bus station and coupled to said bus interface, wherein said bus monitor means gives a secondary function to said bus station in the form of said monitoring,
 - monitoring the communication of said bus station with said bus system via said bus interface by means of said bus monitor means.

25. The method according to claim 24, wherein a monitoring of the telegram traffic carried on the bus system is done from within the bus station.
26. The method according to claim 25, wherein the telegram traffic is detected and further processed with the aid of a program unit arranged within said bus station.
27. A method for carrying out monitoring processes of a bus system, comprising:
 - coupling a bus station to said bus system, wherein said bus station has a primary function such as a sensor function, and comprising at least one bus interface for communication of said bus station with said bus system, and a bus monitor means; wherein said bus monitor means is integrated with said bus station and coupled to said bus interface, wherein said bus monitor means gives a secondary function to said bus station in the form of said monitoring,
 - monitoring the internal communication of said bus station by means of said bus monitor means.